



Green Engineering Program Overview June 20, 1999



EPA Representatives

**Nhan Nguyen - Chemical Engineering Branch
Chief**

**Sharon Weil - Green Engineering Program
Coordinator**

**Scott Prothero - Green Engineering Team,
Software Development**

**Abby Hoats - Green Engineering Team,
Student Intern**

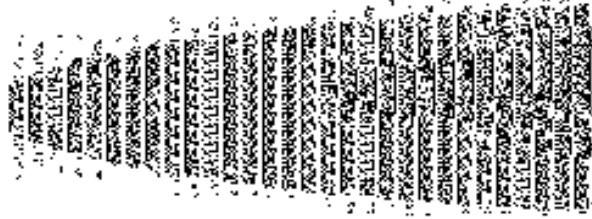
Al Engel - NOWCC, Emeritus Professor, PSU



GOAL OF THE GE PROGRAM

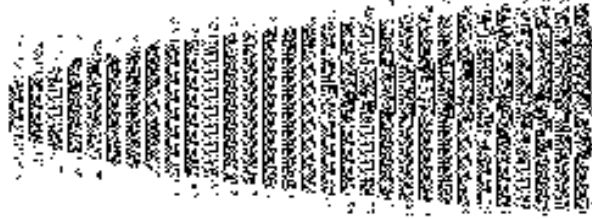
The goal of the Green Engineering Program is to institutionalize green thinking in the academic and industrial communities regarding the design and commercialization of chemical processes and products.





Initial Focus of the GE Program

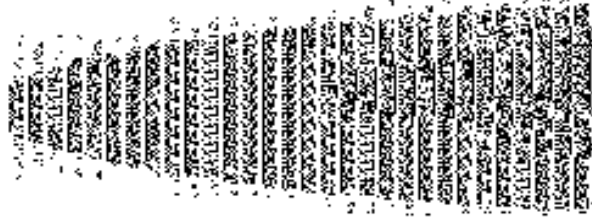
- ◆ **Chemical Engineering Academic Community**
- ◆ **Practicing Engineers in Industry**
- ◆ **Software Development**



Program Components

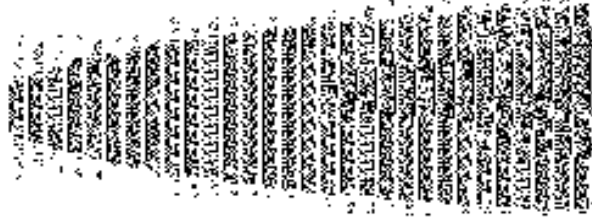
◆ Curriculum Development

- **Materials geared towards senior to graduate level college engineering students**
- **Green Engineering textbook with P2 and risk assessment components**
- **Authors and peer reviewers include prominent professors and industry experts**
- **Nationwide dissemination conducted via partnership with American Society of Engineering Education (ASEE)**



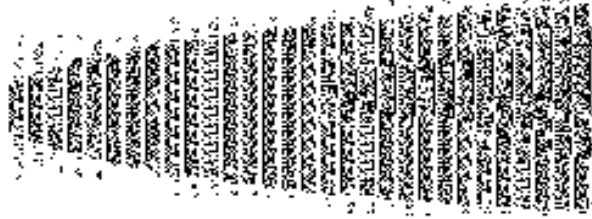
Program Components, Cont.

- ◆ **Workshop Development / Continuing Education**
 - Geared towards practicing engineers
 - Based on core curriculum developed for academia, stressing practical applications and economics
 - Industry workshops conducted in partnership with the American Institute of Chemical Engineers (AIChE)
- ◆ **Software Development**
 - Provide a more holistic approach to chemical



Why are we doing it?

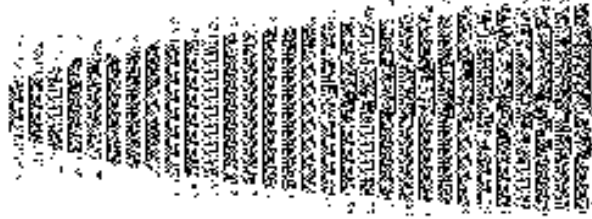
- ◆ **Current courses do not have risk component**
- ◆ **No standardized textbook / course**
- ◆ **No dissemination mechanism**
- ◆ **Academic / Industry Interest**
- ◆ **ABET Criteria 2000**



Why OPPT / EETD / CEB?

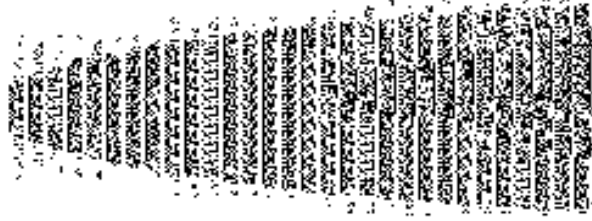
**(Office of Pollution Prevention and Toxics,
Economic, Exposure & Technology Division,
Chemical Engineering Branch)**

- ◆ **Unique position to combine our expertise in risk assessment with pollution prevention as applied to process design**
- ◆ **Need for driving force**



Green Engineering Textbook - Curriculum Dissemination

- ◆ **Dissemination Statistics as of November 17, 1998**
 - 41% of schools (113 professors from 62 different schools) have shown interest / are aware of GE curriculum program
 - Of these 113 professors, 65 expressed high interest
- ◆ **Statistics for June 20, 1999 - ASEE Educators Workshop**
 - 35 registered professors, 2 students
 - 11 New Schools
 - New Disciplines: Interdisciplinary Engineering



ASEE - Chemical Engineering Division

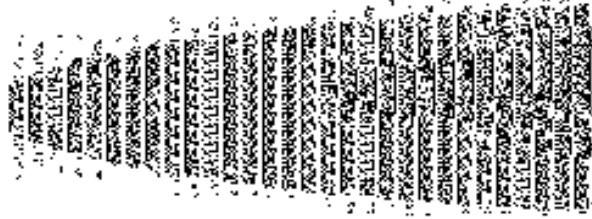
Green Engineering Program Manager: Dianne Dorland - Univ. of Minn. - Duluth

- ◆ **Hosts Educators Workshops**
 - **June 20, 1999 - Charlotte**
 - **Regional Workshops**
 - **Summer School Track - 2002**
- ◆ **Manages Incentive Program**
 - **Student Case Study Award**
 - **Professor / Course Award**



Next Steps

- ◆ **Complete / Publish Textbook**
 - ◆ **Conduct more Educator Workshops - Regional and National**
 - ◆ **Develop Green Engineering Software**
 - ◆ **Implement Incentive Program - Present Awards**
 - ◆ **Develop Industrial Workshops from curriculum material**
 - ◆ **Conduct workshops for practicing engineers**
-
- ▲ **Web site development (post CE materials)**



Evaluation Form

- 1 - What was your overall impression of the workshop?**
- 2 - What did you like most and least about the workshop?**
- 3 - How do you plan on using this material?**
- 4 - Do you have any suggestions for improvement?**
- 5 - Would it be worthwhile to have these workshops regionally?**